

Casting for DAFOs



Helping kids lead healthier, happier lives®

CASCADE
daFO

Tips for working with young patients

During the manual assessment of the foot position:

- Work softly, gently to be persistent but not aggressive.
- Use large surface contact with your hand; do not poke.
- Use handshake pressure.
- Do not grab and let go a lot. This can wear the child out.
- Keep a sock on if possible.
- Use both hands to initiate hindfoot correction.
- Avoid putting your fingers on bony prominences.
- Let the patient move away from your control periodically.

When casting:

- Arrange the seating so that the child is facing you with their feet on a firm, level surface.
 - Enlist the help of a parent or clinical team member.
 - Have some interesting distractions available, like toys, books, or the color "Flipper".
 - Talk to the child about what you are doing.
 - If old enough, ask the child to participate. They can help with color choices, wear gloves, and hold the top of the buffer strip, or simply tell you about their favorite food or sports activity.
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Creating a cast that accurately captures the shape and volume of your patient's foot is critical—it's the first step in the production of a DAFO. The guidelines outlined in this handbook will help you consistently produce casts suitable for effective brace fabrication.

1. Resources

For more in-depth instruction and a hands-on practicum, take our online course in the Cascade Dafo Institute: **Course 3 | Casting for DAFOs**
cascadedafocom/cascade-dafoinstitute



Casting & Measuring webpage with instructional videos:
cascadedafocom/practitioners/casting-measuring

Technical Support:
800.848.7332 | technicalsupport@dafocom

2. Casting supplies

To order casting supplies, order forms are available online at cascadedafocom/ordering/orderforms/ or contact **Customer Service**: 800.848.7332 | customerservice@dafocom



Casting supplies available for purchase:

- Cotton stockinette
- Fiberglass casting tape
- Hook-blade knife and extra blades
- Channel buffer strip
- Medical scissors
- Electrical tape
- Medical gloves
- Casting footplate (individual or complete sets)

3. Casting footplates

Cascade Dafo's casting footplates help position a fully-correctable foot during casting. The level surface of a casting footplate helps the clinician set the heel and dorsiflexion angles accurately and easily post the forefoot, if needed. The footplates also protect the width of the foot when casting so that a snug wrap can precisely represent the volume of the foot and ankle.

For best results, select the appropriate DAFO and cast precisely. For more information, contact **Technical Support:** 800.848.7332 | technicalsupport@dafo.com.



3.1 Selecting the correct casting footplate

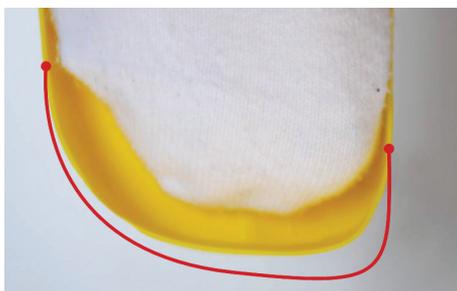
Use a casting footplate if:

- The patient's foot is in a near balanced alignment or can be corrected to a near balanced alignment (*vertical heel with level, or near-level forefoot*);
- The patient's foot anatomy (*in corrected position*) generally matches the shape and contours of the casting footplate.



Verify the heel is in contact with the back edge of footplate and the gap between the toes and footplate is still $\approx \frac{1}{4}$ inch. Using a longer footplate ensures the finished brace will have extra room for growth.

The red line shown in the photo to the left represents the finished length for the DAFO.



Gently push the sides of the footplate into the foot to verify the footplate perimeter conforms well to the foot. The casting tape will similarly compress the footplate around the foot during casting.

Check the width of the footplate at the metatarsal heads. An ideal fit has the footplate in contact at the met-heads without actually interfering (*compressing*) the foot.

3.2 Feather footplates to improve fit

If you find that the footplate does not conform to the foot as you would like, you can feather the footplate to customize it to your patient's foot.

Instructions:

- 1 Using scissors, make straight cuts towards the middle of the footplate.
- 2 Minimize overlapping by clipping corners at a 45° angle.
- 3 Check the fit of the footplate to the foot.

Feathering can be used to increase or lower the arch height, or widen or narrow the width at the met-heads or heel.



4. Preparing for casting

One of the most important steps of casting is *practice*. Before you start casting, rehearse the correction that you plan to make to your patient's foot and ankle.



Rehearse

4.1 Rehearse the correction

For more in-depth instruction, please view the video "Rehearsing your correction before casting" on our website.

Using your hands, practice correcting the patient's foot to a:

- Vertical heel
- Level forefoot
- Dorsiflexion angle of 3-4°

If your patient is not able to achieve this ideal position, please refer to Section 8, *Posting for the uncorrectable foot*.

This will not only tell you what to expect while positioning during casting, but will also let your patient know what to expect during the process.



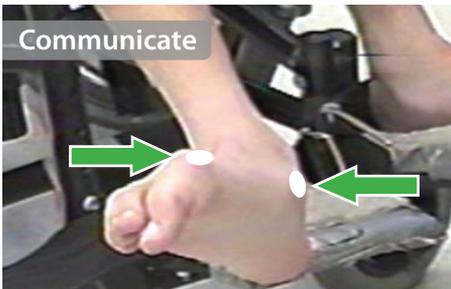
Inspect

4.2 Inspect and communicate

Visually inspect your patient's feet, looking for areas that are boney or red compared to typical surface anatomy.

Communicate any atypical areas for Cascade's fabrication lab by using any of the methods below:

- Inside the cast with sticky foam dots;
- On the order form in the "Special Instructions" box;
- Outside the cast with a marker.



Communicate



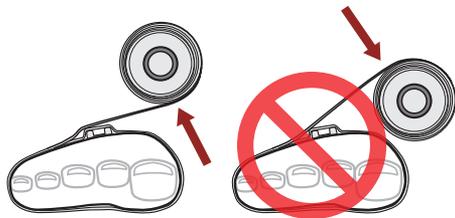
4.3 Dressing the foot

Instructions:

- 1 Slide the first layer of cotton stockinette over the patient's foot, extending from the knee to beyond the toes.
- 2 Position the chosen casting footplate under the foot.
- 3 Apply the second layer of stockinette over the first layer and the casting footplate.
- 4 Place the buffer strip flat side down, along the anterior of the patient's leg and over the dorsum of the foot. Secure with electrical tape.



5. Wrapping the foot and leg



Tape comes off the bottom of the roll



5.1 Preparing the casting tape

Fill a bucket or similar container with room temperature to lukewarm water (hot water may make the tape cure too fast).

Put on latex or nitrile gloves.

Tear the casting tape foil package open and remove roll of tape.

Submerge the roll of casting tape in the water and hold the roll underwater for 5–10 seconds.

Keep the edge side of the tape roll up while underwater. This allows the air to escape (bubbles) and the water to penetrate the inner layers of the roll.

Remove the casting tape from the bucket and squeeze out excess water.

5.2 Wrap the foot and leg

Tip!

Be sure the tape comes off the BOTTOM of the roll.

Instructions:

- 1 Begin wrapping at the midfoot and towards the toes, ensuring that the loose end of the casting tape is secured under the first full wrapping.

Tip!

Beginning the wrap at the midfoot helps to secure the footplate in place under the longitudinal arch of the foot and holds the buffer strip in position.

Overlap each previous layer of tape 25% – 50%. Pass the roll from hand to hand as it passes over and under the foot. Pull on the tape with each wrap to apply moderate tension, which will help compress the footplate to the foot and accurately show all surface contours.



2 Wrap beyond the distal edge of the footplate (past the toes), then return the roll in one or two long wraps to the midfoot area where the cast was started. Continue the wrap from the midfoot toward the hindfoot and remember to maintain tension to keep the footplate snugly against the foot.



3 When wrapping the heel, try to minimize the overlap / layering of the tape in the instep region. The thinner the cast is in the instep, the easier it will be to cut and remove.

Maintain an overlap of the tape as you wrap under the heel.

Tip!

Wrap High on the instep; Low on the heel.



4 As you continue wrapping up the leg, reduce the tension applied to the roll while wrapping, but be sure to apply enough tension for an even application without banding.

5 Cast high on the leg (up to the fibular head)—even for short DAFOs. If a higher brace is required in the future, this cast will be high enough to capture the needed shape.



6 Once you've reached the top end of the cast, add an additional wrap or two and cut off the remaining roll. Smooth the cut end down onto the cast.



When you're done wrapping, rub the completed cast with your hands to help bond the tape layers together.

6. Position of function

IMPORTANT :

Capturing the best alignment is key to good fit and function of a DAFO.



This example shows two casts from the same fully correctable foot: one is uncorrected; the other is corrected to the final alignment desired in the brace.

The uncorrected cast shown on the far left has a prominent navicular and hindfoot valgus—creating a lot of guesswork for the technician asked to make it look like the corrected alignment on the right.

A successful outcome for a patient is best achieved when you're able to properly capture the correct alignment in the cast that you want to see in the brace.



Repeat rehearsal



6.1 Manipulate foot and ankle to corrected position

With the wrapping complete, you will now repeat the correction you rehearsed previously.

- 1 Place the patient's foot onto the horizontal surface and position the patient's knee and foot such that the ankle dorsiflexion angle and medial-lateral alignments are in the optimal position.
- 2 Correct and hold the patient's hindfoot position with one hand. With the other hand, correct and hold the forefoot position.
- 3 If the patient is able to sit relatively still and you can easily maintain the corrected alignments with one hand, massage the casting tape with the fingers of the other hand around key landmarks: ankle, Achilles tendon, heel, instep, navicular, met-heads, and toes.

If the patient cannot sit still, focus on maintaining the alignment corrections.

An assistant may be required to help maintain the patient's knee position.

7. Removal and inspection

When the casting tape begins to feel rigid (3–5 minutes total), it has cured enough to be cut and removed from the patient's foot.



7.1 Cut and remove cast

Instructions:

- 1 Use a Stanley #961 hooked blade in a standard utility handle to cut.

CAUTION:

Keep your free hand clear of the pathway of the knife.

Begin by placing the hooked blade in the buffer strip channel at the top of the cast. Pull-push downward, guiding the blade along the buffer strip channel.

If the casting tape shreds and/or distorts when you begin to cut, you may need to allow more cure time in order for the cast to become more firm.

If the cast is firm but difficult to cut (possibly because the cast is too thick or too hard or the blade is dull), use a slow rocking/wiggling motion to help the blade cut through the fiberglass strands.

- 2 As the knife approaches the instep, position the knife handle a little to one side with the blade at a 45° angle so that you can pull the knife cleanly through the instep bend.

Continue guiding the knife along the buffer strip until the knife blade cuts through the end of the casting tape.

- 3 Remove the buffer strip.
- 4 Use scissors to cut the top layer of stockinette.

(continued on next page)



7.1 **Cut and remove cast** *(continued)*

- 5 Pull the cast open and away from the leg and foot.
- 6 Remove the footplate.



7.2 **Check alignment**

The planned alignment that you rehearsed is extremely important.

Re-align the cut edges and smooth out any deformities caused by cutting and removing.

Observe the hindfoot and dorsiflexion angle.



7.3 Cast evaluation

Features of a good cast:

- Smooth, even wrap with little distortion;
- Good definition of key landmarks;
- Ankle, hindfoot, and forefoot alignments at or close to desired alignments of finished brace;
- Complete coverage from toes to above finished height of brace;
- No distortion due to removing the cast before it has hardened or cured;

When observing the finished cast, is it what you had planned?

If not and you want something other than what the cast represents, you will be less likely to get the desired fit in the final brace.

REMEMBER:

Creating a cast that accurately captures the desired alignment, shape and volume of your patient's foot is critical.

The best and most efficient way to resolve this would be to re-cast right away and ensure the new cast represents what you have planned.

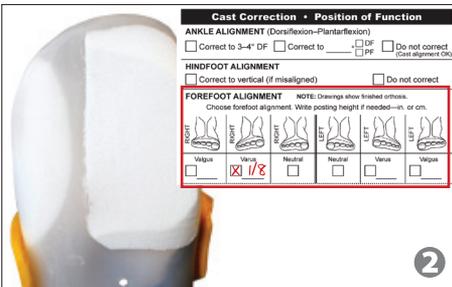
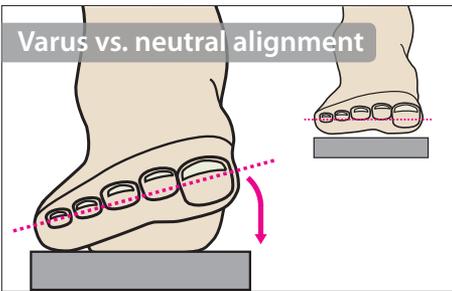
7.4 Finish

- 1 Tape the cast closed with the edges matched.
- 2 Write the patient's name on the cast.
- 3 Place cast(s) in open air for an additional 2+ hours to allow full cure. Protect cast(s) from being distorted or misshapen until fully cured.



8. Posting for uncorrectable feet

When casting a mildly uncorrectable foot, forcing a balanced position will make it difficult to maintain. Instead, hold the heel position in a vertical alignment and compromise the forefoot position where you can easily add posting underneath.



Tip!

Prioritize a vertical heel alignment over a level forefoot position.

8.1 Posting the forefoot

Posting is best when a position is planned and captured during casting.

If the forefoot cannot easily be brought to a neutral, level position without sacrificing heel alignment, consider posting.

Each set of Cascade's casting footplates includes plastic shims to be used for posting the patient's foot during casting. The set includes: 1/16, 1/8, 3/16, 1/4 inch shims.

These can be used alone or can be combined to get a suitable posting height and stabilize the forefoot in varus or valgus position.

8.2 When to use a Varus Post

The initial correction of an *everted* hindfoot to vertical causes the forefoot to rotate to a significant varus alignment.

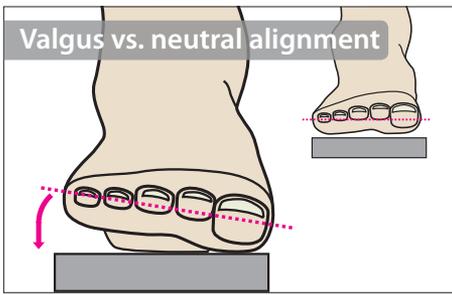
To post the foot in varus:

- 1 Place the shim or combination of shims of the desired posting height under the 1st metatarsal head immediately after wrapping the foot with the casting tape.

The shim should be inserted far enough to raise the 1st met-head to the desired height, but not so far as to raise the entire forefoot.

Maintain consistent downward pressure across the top of the met-head region until the casting tape becomes rigid enough to hold the posted alignment.

- 2 Indicate that you would like varus forefoot posting in the Cast Correction section of the order form. Note the height of the shim used during casting in this section.



8.3 When to use a Valgus post

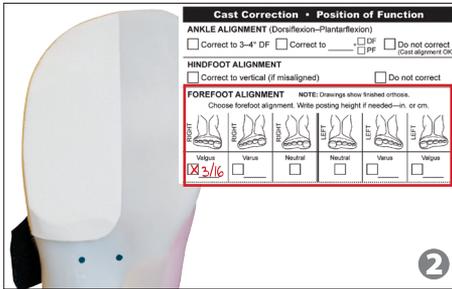
The initial correction of an *inverted* hindfoot to vertical causes the forefoot to rotate to a significant valgus alignment.

To post the foot in valgus:

- 1 Place the shim or combination of shims of the desired posting height under the 5th metatarsal head immediately after wrapping the foot with the casting tape.

The shim should be inserted far enough to raise the 5th met-head to the desired height, but not so far as to raise the entire forefoot.

Maintain consistent downward pressure across the top of the met-head region until the casting tape becomes rigid enough to hold the posted alignment.



- 2 Indicate that you would like valgus forefoot posting in the Cast Correction section of the order form. Note the height of the shim used during casting in this section.

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